



La tentación de San Antonio (1946)
Salvador Dalí

Utilizing the global positioning system for cultural heritage mediation and education

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Abstract

The article explores the various digital possibilities through which cultural heritage and other educational content can be effectively conveyed in the curriculum. The functionality of the Global Positioning System in facilitating an interactive guide will be clarified. Additionally, the focus will be on the WhereIGo application builder, an innovative tool that provides a wide range of options for developing unique activities for learners or visitors. These activities encompass the provision of location-specific information and visuals, navigation to subsequent points of interest as well as the inclusion of tasks accompanied by immediate feedback, hints and more. This text primarily centers around the creation of an immersive outdoor guide created for smartphones and designed directly into the educational environment. The village of Věrovany in the Olomouc Region (Czech Republic) serves as the backdrop for this guide. While presenting the output, the process of its development will be addressed, too.

Keywords: cultural heritage mediation, digital competence, edutainment, GPS, new technologies, learning.

Introduction

New media, information technologies, and occupation of Space – these are the fields of human activities that have become the usual parts of today's society's daily lives. Since the turn of the 20th and the 21st centuries, it is much more apparent that modern technologies influence healthcare, transport, agriculture, lifestyles, shopping, housekeeping, entertainment as well as schooling. One could observe a great increase in establishing home offices, online learning, and other services when companies and schools were closed during the time of Covid-19, too.

Perhaps the new technologies are spreading more rapidly than anyone could ever predict. No wonder we can (and probably should) speak about them even in the cultural heritage mediation. If modern technologies are used properly in that field, they can be of great help to the educational process.

The Contents and the Aim of the Paper

It is exactly the usage of the Global Positioning System in education that the paper is dedicated to. Using the specific example of an interactive guide which was designed by the author of the text, and which teaches the visitors about the sights of the Věrovany village (located in the Olomouc Region of the Czech Republic), the paper shows how the navigation system can be used via smartphones to mediate cultural heritage. The guide provides interesting facts, historical photographs, and tasks with instant feedback or hints. It also leads the user through sites in the village. The project was put into operation in 2016 after detailed historic research of the sights and a general study of other approaches on the boundary of edu-

tainment¹ and cultural heritage. The creation of the guide was supervised by Palacký University Olomouc (Czech Republic). Several times during its development, the guide was tested by various groups of visitors and evaluated by pedagogical as well as technological professionals.

At first, the paper briefly describes the technical background of the topic, the keywords used in the text, and the functioning and operation of the GPS. The paper introduces the WhereIGo application builder that gives the author various possibilities to develop unique activities for visitors. Subsequently, the text explicitly comments on some general conditions and requirements when using an approach to mediate cultural heritage to pupils in schools or other educational institutions. Then, the text deals with the interactive guide through Věrovany. In the end, we suggest other specific inspiring projects based on the usage of the Global Positioning System in the educational process.

The aim of the paper is to show teachers, museum educators, and other interested people some possibilities of the usage of the Global Positioning System (GPS) in cultural heritage mediation and a relatively easy way to support the development of society's digital competence and regional cultural awareness. In addition the text analyses the benefits of implementing GPS technologies into education and possible risks to be aware of.

Terminology

This chapter explains important terms for this publication relating to areas such

¹ The term is a blend of education and entertainment. It means that a person is entertained while learning something.

as various satellite navigation systems, and the terms culture and cultural heritage are described. Lastly, the chapter comments on relevant aspects of smartphones. All these terms are explained in the scope required for understanding the introduced GPS-based educational projects. More detailed discussion would exceed the intentions of this document.

1. Satellite navigation systems (GLONASS, GALILEO, GPS)

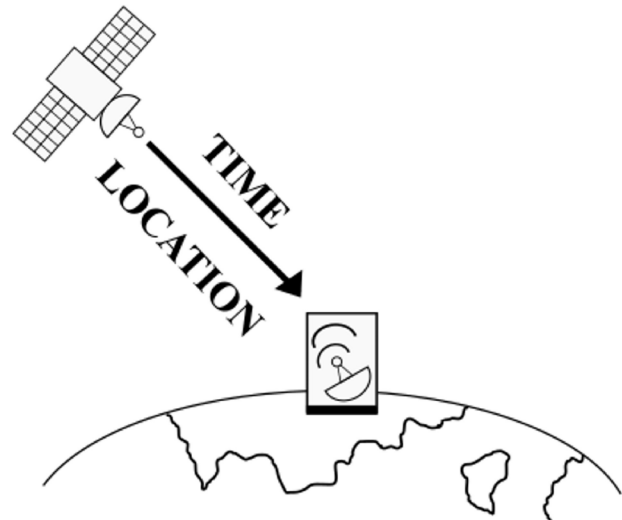
The Global Navigation Satellite System (GNSS) is used to determine a location on the Earth's surface. A few similarly working positioning systems operate upon the GNSS. Russian GLONASS, which is used mainly in Russian territory, is one of them. Then there is Galileo, a project of the European Union, whose development is led by the European Space Agency – ESA. It aims to provide an accurate navigation system independent of the Russian GLONASS or the American Global Positioning System – GPS.

GPS is the most used navigation system in the Czech Republic and Central Europe so far. As Svatoňová (2014) points out, the system is operated by the United States Department of Defense and was primarily intended for military purposes. In 1983, Ronald Reagan, the 40th President of the United States, decided to make the Global Positioning System accessible to the public.

Svatoňová (2014) shows an elaborate description of the GPS principle. A person can simply imagine that the signal emitted from the satellite towards the Earth carries information about the time of emission, and information about the current location of this satellite (see *figure 1*).

Figure 1

The signal emitted from the satellite towards the Earth carries information about the time of emission, and information about the current location of this satellite.



Source: self made

The device receiving the signal (e. g. our smartphone or car navigation) calculates the delay between the time of emission from the satellite and the time of acceptance on the Earth's surface.² The device on the Earth receives signals from more satellites at the same time and evaluates its own distance from each of the satellites. To be able to determine its own location, the device must receive signals from at least three different satellites simultaneously³ (see *figure 2*).

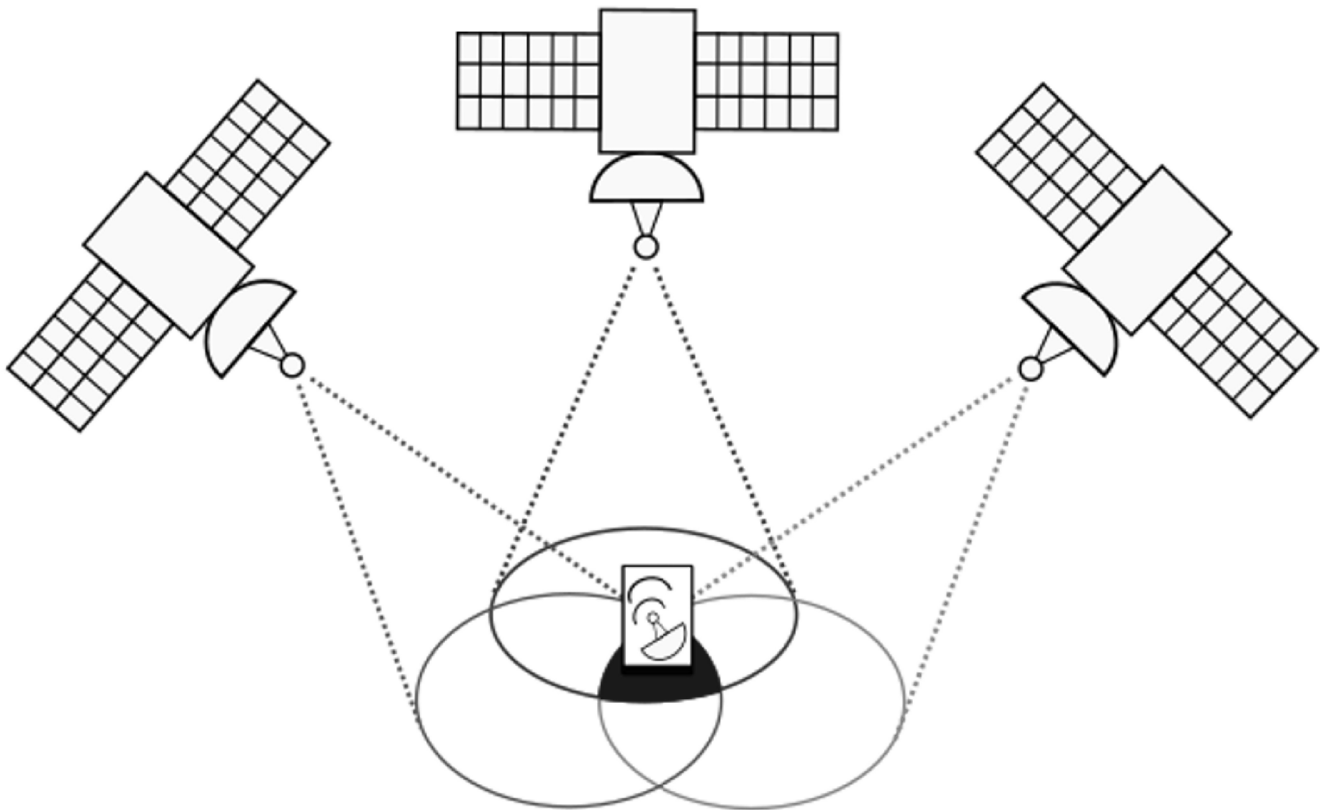
The location of the device (or any object equipped by the instrument which can re-

² For the calculation the device uses the velocity of light (299 792 458 m/s in vacuum) as the signal travels at that speed (Čábelka, 2008).

³ Positioning can be thought of as intersecting circles, where the points of the circle have the same distance from a given satellite (which is the center of the circle). The receiver is then likely to be located where (at least three) circles intersect (Svatoňová, 2014).

Figure 2

The device on the Earth surface receives the signals from three different satellites simultaneously and determines its location.



Source: self made

ceive the signals from the satellites and evaluate the data) is defined by three perpendicular lines whose intersection lies in the Earth's center.⁴

2. Smartphone, operating system

At the beginning of this chapter, it is appropriate to mention again that the selected terms are clarified just in the context of

⁴ It is related to the geographic coordinate system (GCS). On the axes, a man can read the latitude, longitude and altitude of the "point" in which the device is just located. Usually, only latitude and longitude are used (e. g. in car navigation) as the object location being defined is supposedly on the Earth's surface (and therefore it is unnecessary to consider the height above sea level).

the GPS-based educational projects introduced further.

Nowadays, a smartphone belongs to the most used electronic device. Typical usage spans calling, texting through various communication applications, browsing the internet and social media, gaming, shopping, turn-by-turn navigation, creating audio-visual content and its editing or sharing, and many other activities. The possibilities of smartphones are almost unlimited with appropriate hardware and software support.

A smartphone is equipped with a touchscreen, which makes it easier and quicker to control an operating system. It facilitates the interaction between the user, the hardware

(a smartphone, a tablet, or a personal computer), and the individual applications in the smartphone. The operating systems differ in the versions and the specific device they are intended for (basically for example iOS for the devices Apple, Android for most of the other devices).

3. Culture, tangible and intangible cultural heritage

The Oxford Learner's Dictionaries shows that the term "culture" can be defined in various contexts.⁵ Harper (n.d., b) explains that the noun "culture" comes from the Latin word "colere" which can be understood as "to tend, guard; to till cultivate." One can also read about the "cultivation through education, systematic improvement and refinement of the mind" (Harper, n.d., a).

Moree (2015) remarks that only in anthropology there are more than two hundred definitions of the word culture, and it belongs to the most difficult words in English to explain. According to the definition by the Oxford University Press (n.d.), culture is "the customs and beliefs, art, way of life and social organization of a particular country or group." UNESCO⁶ (2001) defines culture as "the set of distinctive spiritual, material,

intellectual and emotional features of society or a social group, that encompasses, not only art and literature but lifestyles, ways of living together, value systems, tradition, and beliefs."

Following the latest definition of UNESCO Institute for Statistics (2023), based on the 2009 UNESCO Framework for Cultural Statistics, the cultural heritage "includes artifacts, monuments, a group of buildings and sites, museums that have a diversity of values including symbolic, historic, artistic, aesthetic, ethnological or anthropological, scientific and social significance. It includes tangible heritage (movable, immobile, and underwater), intangible cultural heritage (ICH) embedded into cultural, and natural heritage artifacts, sites, or monuments. The definition excludes ICH related to other cultural domains such as festivals, celebrations, etc. It covers industrial heritage and cave paintings."⁷

According to Text of the Convention for the Safeguarding of the Intangible Cultural Heritage by UNESCO (1992-2022) from 2003, the ICH is defined as "the practices, representations, expressions, knowledge, skills - as well as the instruments, objects, artifacts and cultural spaces associated therewith - that communities, groups and, in some cases, individuals recognize as part of their cultural heritage." Intangible or immaterial cultural heritage does not have a material form, it is naturally passed on from one generation to another and it can even adjust regarding the external environment. The

⁵ Oxford University Press (n.d.) suggests that biologists understand culture as "the growing of plants or producing of particular animals in order to get a particular substance or crop from them" or "a group of cells or bacteria". The farmers and foresters surely keep in mind that the culture is the act of cultivating large areas, founding and treatment of herbage. This explanation can be also found in the etymology of the word agriculture where we understand "agro-" as "field" and "culture" as "cultivation" (Harper, n.d., a).

⁶ The United Nations Educational, Scientific and Cultural Organization.

⁷ Here, the natural heritage could be discussed as well. It is closely connected to the cultural heritage - they sometimes influence each other. Moreover, the natural heritage could also be an issue to be mediated via GPS-based interactive guides.

ICH includes sayings, proverbs, quotations, performing arts, social customs, traditions, and experience.

GPS in the educational process

Navigation systems, including GPS, have great potential in the educational process. The educational process is naturally understood as the activity carried out at schools involving children (pupils) and teachers. However, education can take place in free time institutions, museums, or at educational trails in the countryside. Not only children but also adults or seniors can be involved. Educators are not only teachers but also museum educators as well as parents. Although the suggestions could be easily transferred into any other field of the educational process involving any participants, the text discusses the issue within the school environment.

For example, Svatoňová et al. (2014) introduce several projects realized with pupils in biology, geography, or chemistry. In the terrain, the pupils measure the distance, area, or altitude and they try to process the data later at classes. Using other examples Ruda (2014) shows that the pupils map conifers or record the presence of species. Plucková (2014) explains how the pupils record the quality of soil in a specific area.

Next, the Geofun mobile application works in the Czech environment. A team of interested people, of which anyone can become a part, creates geolocation fun games. A special branch of Geofun is Schoolfun which contains various e-learning games. The topic of the use of new technologies for educational purposes is also addressed by the authors La Guardia, Arrigo, and Di Giuseppe (n.d.). They describe in detail the creation of O'Munaciedd, a location-based game for

children. It is based on traditional folk stories from Basilicata and focuses on cultural exploration. The authors Kriglstein, Brandmuller, Pohl, and Bauer (2017) detail a location-based learning game for understanding the traveling salesman problem. In doing so, they also reflect on the benefits of applying this approach in education.

From the above fraction of examples, GPS in education can be used in many areas. Hitherto the paper focuses mainly on the use of GPS for access to cultural heritage. It discusses the creation of the interactive guide via WhereIGo application builder that could be helpful in cultural heritage mediation – an art lesson, history, or social science if one wants to narrow down school subjects. The following text focuses on the specifics that might occur when using GPS for cultural heritage mediation to pupils (children ca. 6–15 years old). The suggestions come out of the author's observation and experience. These are based on studies in general pedagogy, art and museum education, as well as almost seven years of teaching experience in primary school.

The fact that today many pupils possess their own smartphones, can be taken as a great advantage. Simultaneously they have at least basic knowledge to operate smartphones, they can download required applications and – if the applications are intuitive enough – pupils are also able to manage them and work with them. Educators can take advantage of this fact and interconnect different fields of education (culture, history, informatic technologies – IT). Moreover, the interactive educational outdoor guide with instant feedback provides an interesting element enriching the learning process.

Concerning the application builder WhereIGo, and the application in which

the cartridge⁸ is then activated by the user (WhereIgo or WhereYouGo) it is feasible to undertake the activity with pupils of basic schools. The technical demands both on educators (mediator, teacher) and pupils are adequate. Still, in the case of pupils unable to operate their smartphones, it is needed to introduce them to the application in more detail. Nevertheless, the properties of all the GPS-based projects in this text assume basic knowledge and skills and therefore the GPS-based projects are suitable for the basic school educational process.

Next, the pupils might not possess smartphones, or the parents do not allow them to download the application they do not know. We suggest that the pupils' participation is optional and with their parent's consent. It also can be advisable to group the pupils so that only a few smartphones with the activated interactive guide are required. An educator may prefer group work in different situations as well (e. g. to strengthen communication skills). If there is an obstacle such as the lack of smartphones in the class, the institutions that might lend the appropriate devices could be asked for help (e. g. Faculty of Science – the Department of Geoinformatics).

On the other hand, not everyone will be interested in projects involving geolocation. The educator's personality and skills are also contributing factors to pupils' motivation. Here, as in any other educational activity, the educator is the key element. They should be flexible to respond to any specific circumstance such as the heterogeneity⁹ of the

class, pupils' knowledge, age, concentration span etc.

The eyes cannot be closed to the new technologies that are increasingly penetrating people's lives. Teachers are trying to guide and direct pupils' time on new technologies in the right direction. The author of the text does not see the solution in banning pupils from spending time with mobile phones and computers but rather in creating the conditions for new technologies to help develop pupils' competencies, knowledge and skills. It might be helpful to take advantage of games, gaming and gamification in education, for example, Valja (2022) describes in more detail.

The author of this paper is aware of the critical voices. Nevertheless, as an educator, she tries to use the WhereIgo tool to create an interactive guide that does not offer what computer games do but follows general educational objectives and methodological principles to achieve them. How she tries to achieve that is explained in the following chapters.

The possibilities of the WhereIgo application builder

Every project starts with a great idea. It is valid for GPS-based educational projects as well. The free-of-charge toolset WhereIgo is intended for creating outdoor interactive guides or adventure games in the real world. It enables the author to create a cartridge that can be easily distributed as a usual file via the Internet or other suitable device, such as USB-drive. It can be downloaded into a smartphone, tablet, or Garmin¹⁰ devices.

⁸ Each game is represented by a digital archive that is called cartridge.

⁹ This term refers to a condition when there is nonuniformity of the individuals' characteristics within a group (of people). Different ethnicities or cultural backgrounds could be especially problematic when teaching about cultural heritage.

¹⁰ Garmin Ltd. is a company that specializes in GPS technology.

Image 1

The interactive guide communicates with the visitor at the defined location near the local firefighter station.



Source: self made

Once the cartridge is downloaded and opened, it starts to interact with the user. It provides the texts, pictures, sounds, tasks, countdowns, etc. designed by the author of the guide (see *image 1*). When there is a task, the answer is evaluated immediately. The guide gives the visitor instant feedback, and it manages the subsequent steps based on the answer. It navigates the visitor from one stop (with a task) to another one.

The authors should take into account the physical surroundings of the place they want to introduce when designing the guide. The

aim of the guide should be considered as well. Many aspects should be thought of in advance – *Is it desirable to create an adventurous tour for adults or a fun walk with dwarfs for families? Will the tour consist of various tasks to be completed? Will there be any hints, time limits, or sanctions?* The possibilities of the application builder are almost unlimited. The application tools can be combined in hundreds of ways. It depends only on the author's fantasy and logical thinking. Everything needs to be used properly so that the design of the tasks, answers, and consequently the whole guide prevents looping.

To describe how the application builder WhereIGo works and how the guided tour can be created, we start with a basic unit of the guided tour: *zone*. Zones can be simply understood as points of interest (a church, a chapel, a statue, etc.) and are created usually as rectangles or trapezoids on a map in the application builder. However, as the signal of the global positioning system can vary, it is very useful to follow basic rules when designing the zones. They should be of a concave shape and at least 20 times 20 meters large. This precaution should prevent any inconveniences caused by fluctuating signals. This is why it is handy to understand how the GPS works.

Anything that the creators want to prepare for users, they do so within each zone separately. At a chapel, you can let the visitor read a text, browse historical photos, answer questions, get immediate feedback, and thank them for a job well done. An author can set a time limit or a countdown. S/he can offer a virtual bag for collected imaginary items that can be used later. After the visitor explores everything that the creator has prepared within the zone, s/he is led to the next zone. Together, the interconnected zones build a whole guided tour. Moreover, at the end of the tour, the visitors can be presented with an opportunity to find a treasure. The tools can be combined in an unlimited number of ways and so every zone can be original in its design and actions. The almost only limitation is the author's fantasy.

The cultural heritage mediation – a practical example of an interactive guide

The paper has already mentioned some GPS-based educational projects in the chapter 4 GPS in the educational process. GPS

can be used in many school subjects, Svatoňová and her colleagues (2014) prove that. This chapter suggests how the GPS can help in cultural heritage mediation. However, as we could have already recognized, the following project will not only teach history or art but also strengthen information technology knowledge, communication skills, critical thinking, problem-solving, etc. When the author of this text studied pedagogy with a focus on cultural heritage and at the same time got into the WhereIGo tool, she realized the educational potential of this tool. She did not see it as a tool to create adventure games, but rather as a didactic tool to be used for fun education. This is how she approached the entire creation of the interactive guide presented below.

A designed guided tour through the Věrovany village sites (Olomouc Region, Czech Republic) in 2016 is a part of the author's master thesis at the Palacký University Olomouc, which was supervised by doc. Mgr. Petra Šobáňová, Ph.D.¹¹ The three-kilometre-long walk offers ten stops with various tasks. If the task is more challenging, there is a hint so that anyone can finish the tour successfully and find a treasure. A church, chapels, statues and a watermill or local customs are introduced. The visitors must investigate Roman numerals hidden in the text at a statue, or e.g., can find a place where the historical photo of a rebuilt power station has been taken a few decades ago.

¹¹ In more detail the project is discussed in the master thesis *Využití satelitního navigačního systému ke zpřístupňování kulturního dědictví obce Věrovany* (Usage of a satellite navigation system for accessing of cultural heritage of the village Věrovany) by Veronika Mrázková and is available at theses.cz.

It is an interactive guide created directly into the teaching environment. In doing so, the author was aware of the benefits and risks of using this tool, which she considered in her work. She drew primarily on the Framework Education Programme for Basic Education (published by the Ministry of Education, Youth and Sports of the Czech Republic), which corresponds in its main objectives, for example, to the objectives of PISA. It was tested by children from summer camps, pupils of a basic school and other volunteers, including professionals from different fields. The cartridge named Památky Věrovan (translates as Věrovany village sites) is available for free at geocaching.com or whereigo.com. Although the author was aware of the risks involved in this tool use, she tried to take full advantage of the positive possibilities. There are several factors available to the teacher-creator to use and adjust to best help achieve the educational goals.

Obviously, if we want to give pupils enough time to complete a task, we do not set a time limit for this activity. However, on the contrary, we can use the time limit to offer the learner a hint (which s/he may even refuse) sometimes after the task has started. The author used this possibility in the case of the task at the water mill (rebuilt power station). After the pupils are given a short introduction, they are shown a historical photograph of the building and asked to try to find the place where the photographer was standing when the photograph was taken. The pupils walk around the water mill and make a comparison between the photograph of the building and the reality. After five minutes, pupils are offered a clue. This clue focuses their attention on the two main features of the building (windows and gables). The clue is also included to ensure that pupils do not

stray completely off course when observing the photograph and the building. After another five minutes, they are again offered a clue that already explicitly sends them to the required location. However, appropriate wording enables everyone to feel successful.

Other hints were also designed with the principle of leaving the pupil with the pleasure of solving the task. If a pupil does not answer correctly, it is always explained how to reach the correct solution. This aspect was one of the most difficult to design in the creation of the guide and a lot of time was spent on it. Not only all the tasks were carefully tested, but also the guide as a whole and especially the individual language formulations. The precise choice of words also reflects at least three issues: firstly, whether the task is closed or open-ended, secondly, that the tour can be completed within no more than two and a half hours, and, thirdly, the pupil's concentration.

One of the most explicit clues belongs to the task of determining a shape of a floor plan of a chapel. A pupil is told what a floor plan is right at the beginning and how to determine it in this case: simply by counting the walls. The hint after getting the answer wrong tells that the pupil has not calculated correctly. S/he is told to try again and if s/he counts to the number eight, s/he will surely determine the correct answer. That is an "octagon." So, it is not just creating interesting and varied tasks, but the success of the route also depends on every word that is said. The author's intention was to give enough hints when problems arise to ensure that the task can be completed, but only to the extent that the pupil knows what to do and is not denied the joy of arriving at the solution her/himself.

Speaking of hints and completing tasks, we also mention the penalties for entering an incorrect answer. Again, the author of the guide has many options. Firstly, s/he does not have to impose any penalty and just tells you the correct answer. This is not used by the author of the *Památky Věrovan* guide so that the pupil does not simply click through the texts. Second, it imposes an alternative task on the failing pupil or guides her/him through a longer route. However, the author did not consider this option to be appropriate either, given that in this case the unsuccessful pupil would learn something more than the pupil who answered correctly the first time. Thirdly, the navigation to the next stop can only be triggered after the expiration of the penalty time limit (e.g., 3 min). In a larger group of pupils, however, the author also sees this as counterproductive for educational needs.

After various testing and consultation with the didactics professionals, it was decided that the penalties would take the form of a supplementary text that would briefly and concisely explain how to succeed in the solution. In the exceptional case, the correct answer is mentioned directly in the clue, thus supporting the development of **reading literacy** (e.g., searching in the text and paying attention to it). To some extent, however, it is still left up to the players whether they show interest in learning something.

It is clear from the above that an interactive guide responding to the visitor's current location and providing immediate feedback on the tasks can be a beneficial educational tool if created and used properly. In the specific example *Památky Věrovan* the author tries to show some possibilities of the WheelGo application builder which each educator can adjust to the specific purpose, region or pupils.

Discussion

As a society has been rapidly changing through the last decades, education has been naturally changing as well. New technologies increasingly participate in teaching and learning. This paper focuses on the Global Positioning System and its contribution to various educational fields – Arts, History but also Biology, Geography, Physics, Mathematics, and many others (Plucková, 2014; Ruda, 2014; Svatoňová, 2014). Although the usage of GPS is not very common in (Czech) schools, there are opportunities for improvements.

The paper introduces a couple of projects that could become valuable means in today's (not only Czech) education and learning in general. The regional outdoor guide *Památky Věrovan* is successfully used by nearby pupils a few times a year. Unfortunately, there is no complex data about the existence of other similar GPS-based educational projects and their visit rate. Therefore, the author introduces two other projects for cultural heritage mediation and she has an ambition to see them come to life, too.

Firstly, it might seem possible to create a virtual excursion based on the same principle as the outdoor guide *Památky Věrovan*. Although the author of this concept believes that every citizen of a country should visit its capital city to discover the monuments in situ, a virtual excursion can help those who are unable to make such a trip. It could be of great help when for any reason (finances, health, lack of time) a teacher cannot invite the pupils for a physical trip. Let Prague, the capital of the Czech Republic, be the model example. It is not unusual to start the real excursion at the Prague Main Station, pass the Historical Building of the National Museum,

and cross the Wenceslav Square to the Old Town Square. Then the tour can continue to the Charles Bridge, the Prague Castle and the Petřín Lookout Tower. From that point, a visitor can return across Kampa Island and Legion Bridge to Wenceslav Square. Thanks to WhereIgo it is partially possible and at the same time very easy to translate such a guided tour into the virtual world. Users move themselves physically (with their smartphones), however, in a place different from the real capital. Teachers can use such a virtual guided tour to show the capital to the pupils on a meadow next to their school. The smartphones tell the pupils where to move to, and which direction to follow, it shows (or tells) interesting information about the chosen places or monuments and it also displays photos of the places (historical photos can be added, too). Moreover, the virtual guided tour does not have to substitute for the real visit in the city. It can also be used as an evocation before the real visit of the capital or on the contrary to solidify the memories of the real trip a few months after it. The track of the cartridge can simulate the real distances and directions from one point of interest to another. It is possible to keep the ratio between the real and virtual distances and for example to shorten all the distances to half. If the directions are kept as well, it might support pupils' **spatial orientation** and idea of how far the monuments are from one another.

Secondly, the functions of a cartridge created in the WhereIgo application builder allow us to prepare a simulation of the Migration Period or other significant expeditions (overseas discoveries, etc.). When starting the cartridge in the smartphone, the visitor is taken to the relevant century. The important people and the common life of that era are briefly introduced. Then the pupil can read or listen to the circumstances that lead to

the event. The pupil is virtually transferred to the appropriate place (maps and pictures are displayed on the smartphone) and the cartridge instructs where to move to, what feelings to imagine etc.

The author suggests the projects mentioned above because she verifies the use of GPS-based projects in the educational process on a specific interactive guide *Památky Věrovan*. The project was tested and evaluated by children, pupils, also teachers and IT professionals. From different points of view, it also was discussed with professionals from the Palacký University Olomouc. As it works satisfactorily and is successfully visited by pupils and teachers, as well as the public, the author dares to encourage educators to create their interactive guides based on their requirements.

Conclusion

In the paper, the author focused on cultural heritage mediation. She does not offer only the description of the projects, but she tries to consider both advantages and disadvantages, too. From her point of view, the benefits outnumber the downsides, therefore she encourages using the Global Positioning System in the educational processes.

Undoubtedly, the interconnection of the GPS and the cultural heritage mediation can contribute to a culturally (as well as digitally) educated society. However, the author suggests using the new technologies in such a way that does not lead to overshadowing the rich history.

Acknowledgement

The core of this paper is an output of the master thesis (both theoretical as well as

practical parts) that has been providing a good practice example at a basic school since 2016. In 2022 the GPS-based educational projects have become a part of doctoral research (by Veronika Nirnbergová, Palacký University Olomouc, Czech Republic) which deals with the cultural heritage mediation at basic schools.

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